Message

From: James Ewell [james.ewell@greenblue.org]
Sent: 12/19/2018 7:45:58 PM
To: Newman, Christopher [newman.christopherm@epa.gov]
CC: Bray, Brandon [Bray.Brandon@epa.gov]; Elwood, Holly [Elwood.Holly@epa.gov]; Kinn, Alison [Kinn.Alison@epa.gov]; Katz, John [Katz.John@epa.gov]; Pollard, Karen [Pollard.Karen@epa.gov]; Ganguli, Swarupa [Ganguli.Swarupa@epa.gov]
Subject: Re: E-waste recyclers
Attachments: ATT00001.txt

Thanks for sharing, Chris. I think we have this research identified on our technology landscape in order to keep an eye on it. Most of the technologies we are prioritizing have commercial time horizons of 4-8 years or so. It is often hard to gauge how long promising university research will take to reach commercial phase much less commercial scale. But much of the progress made on the chemical recycling front seems to involve use of solvents to selectively extract target materials (low mol. wt resins or monomers).

See research report I did in 2016/17 for a sample of some of these for polyester resins.

Cheers,
James

On Wed, Dec 19, 2018 at 1:39 PM Newman, Christopher <newman.christopherm@epa.gov> wrote:

> Hi James,
>
> Here's something else to check into. Check out page 20 of this report, I think that this is the kind of project you are interested in tracking?
> https://www.ideals.illinois.edu/bitstream/handle/2142/101402/170719117_ISTC_2018-Annual-Report_DIGITAL.pdf?sequence=2&isAllowed=y
>
> Chris Newman
>
> **From:** James Ewell <james.ewell@greenblue.org>
> **Sent:** Tuesday, December 18, 2018 11:57 AM
> **To:** Bray, Brandon <Bray.Brandon@epa.gov>
> **Cc:** Elwood, Holly <Elwood.Holly@epa.gov>; Kinn, Alison <Kinn.Alison@epa.gov>; Katz, John <Katz.John@epa.gov>; Newman, Christopher <newman.christopherm@epa.gov>; Pollard, Karen <Pollard.Karen@epa.gov>; Ganguli, Swarupa <Ganguli.Swarupa@epa.gov>
> **Subject:** Re: E-waste recyclers
>
> Hi Brandon,

Thanks for your note and for asking Swarupa if she has any additional info.

Think I'm using the two separate sites vs combined but will double check on that. Thanks for pointing this out before we map locations.

james

On Tue, Dec 18, 2018 at 12:51 PM Bray, Brandon <Bray.Brandon@epa.gov> wrote:

Hi James –

As far as I am aware, the ORD (2012) report that you attached is the most recent word from EPA on chemical recycling of plastics. I am adding Swarupa Ganguli to this chain – Swarupa has been tracking chemical recycling for ORCR and may know of something more recent than the ORD report.

Certainly, as Karen indicated, we have not done any additional work on chemical recycling of plastics specifically from used electronics of which I am aware.

A quick clarification regarding the map you are constructing of electronics recyclers – I would recommend using the R2 and e-Stewards maps that Karen linked to, as they are updated with a much higher frequency than EPA's map that Holly provided (which attempts to combine the R2 and e-Stewards databases in one place).

Best,

-Brandon

Brandon Bray

Physical Scientist

U.S. EPA Office of Resource Conservation and Recovery

Resource Conservation and Sustainability Division

Sustainable Materials Branch

(703) 308-7253

From: James Ewell <james.ewell@greenblue.org>
Sent: Tuesday, December 18, 2018 10:23 AM
To: Pollard, Karen <Pollard.Karen@epa.gov>
Cc: Elwood, Holly <Elwood.Holly@epa.gov>; Kinn, Alison <Kinn.Alison@epa.gov>; Bray, Brandon <Bray.Brandon@epa.gov>; Katz, John <Katz.John@epa.gov>; Newman, Christopher <newman.christopherm@epa.gov>
Subject: Re: E-waste recyclers

I asked b/c ORD and some other government agencies (DoE, DoD, USDA for AD) have been tracking the space for a while. See attached for EPA ORD 2012 report on selected conversion technologies for processing various mixed wastes. There may be other EPA publications but I have not done an exhaustive search as yet.

We are producing a map that represents technologies along the entire spectrum of chemical recycling technologies to characterize the landscape as accurately as we can for investors, policymakers and industry stakeholders. It is somewhat similar to the attached ORD analysis.

Looking forward to sharing with EPA folks when we are prepared to share with external stakeholders.

More to come....

James

On Tue, Dec 18, 2018 at 10:12 AM Pollard, Karen <Pollard.Karen@epa.gov> wrote:

> I am not aware of any research we (EPA) have done re: chemically removing the BFRs from the plastic.
>
> Karen
>
> **From:** James Ewell <james.ewell@greenblue.org>
> **Sent:** Tuesday, December 18, 2018 10:01 AM
> **To:** Pollard, Karen <Pollard.Karen@epa.gov>

Cc: Elwood, Holly <Elwood.Holly@epa.gov>; Kinn, Alison <Kinn.Alison@epa.gov>; Bray, Brandon <Bray.Brandon@epa.gov>; Katz, John <Katz.John@epa.gov>; Newman, Christopher <newman.christopherm@epa.gov>
Subject: Re: E-waste recyclers

Thank you to all of you for sending contacts and insights about companies that could add value to our research. The two primary sources you provided for e-waste recyclers are excellent and we are in the process of mapping those now before our deadline of tomorrow.

How much research has EPA done on chemical recycling processes for e-waste plastics? I'm particularly keen on finding existing and emerging processes that can extract halogens from plastics (primarily BFRs) so that they have more diverse end markets. Chlorinated and brominated plastics are a challenge even for decomposition processes like pyrolysis, gasification and as you know there is now additional pressure from EU thresholds for DecaBDE.

Cheers,

James

On Tue, Dec 18, 2018 at 8:02 AM Pollard, Karen <Pollard.Karen@epa.gov> wrote:

> Hi James:
>
> Couple of bits of input:
>
> Dell and HP both have a closed loop system for recycling plastics – you may want to check with Beth Johnson (Elizabeth.Johnson@dell.com) of Dell or Brandon Seegmiller (brandon.seegmiller@hp.com) to see if they may be interested in working with Google on this initiative.
>
> To find out list of electronics recyclers/ processors you should go to the e-stewards (http://e-stewards.org/find-a-recycler/) and R2 (https://sustainableelectronics.org/recyclers) certification programs. Those sites have a list of recyclers that are certified to recycling standards. ISRI will only have information on their member recyclers – but they are the largest recycling trade organization.
>
> Some recyclers that have some specialty with plastics are:

Owl Electronics Recycling

Sims Recycling

MRM

Wistron

I hate to send you to other countries for plastics information but EMPA (materials Science and Technology) folks have done some work in e-waste plastic, that you may want to investigate. My contact there is Michael Gasser (michael.gasser@empa.ch).

Brandon may have other ideas as well.

Karen

From: James Ewell <james.ewell@greenblue.org>
Sent: Monday, December 17, 2018 1:01 PM
To: Elwood, Holly <Elwood.Holly@epa.gov>
Cc: Kinn, Alison <Kinn.Alison@epa.gov>; Pollard, Karen <Pollard.Karen@epa.gov>; Bray, Brandon <Bray.Brandon@epa.gov>; Katz, John <Katz.John@epa.gov>; Newman, Christopher <newman.christopherm@epa.gov>
Subject: Re: E-waste recyclers

Hi Holly,

Information is super helpful! Had not thought about contacting Bill Hoffman. Good idea. Curious to get an update on the NSF/IEEE Server standard when time allows. Was not able to stay directly connected to that effort.

Maybe we can arrange to do a private webinar to EPA staff to share info about project. Need to get Google's input on the electronics aspects of it before arranging but let me know if that would be of interest to you and colleagues.

Best,

James

On Mon, Dec 17, 2018 at 12:38 PM Elwood, Holly <Elwood.Holly@epa.gov> wrote:

Hi James!

So excited to hear about this incredibly valuable research you are doing! Please let me know when you will be able to share your project goals and status via a call with our group as we'd all love to get more details and figure out how we can help.

I have sent your request on to John Katz, Brandon Bray, and Chris Newman, and Sandra Cannon, who have all been working on these topics in our work to develop electronic product sustainability standards. Ccing them here too.

For a map of electronics recyclers, you could start with the one that ORCR has created for R2 and E Stewards certified recyclers: https://www.epa.gov/smm-electronics/certified-electronics-recyclers

This won't be a comprehensive list of all electronics recyclers in the US, but will give you some of them. I'm not sure how frequently they update this list so you may want to look at the R2 and E Stewards pages to get their up to date lists.

ISRI (Institute for Scrap Recycling International) may have a more complete list also. www.isri.org. Does someone have a good contact for James there?

Sandra and John and Chris can tell you about the kinds of plastic being used in electronic components.

Bill Hoffman of UL may also be good to talk to, since they have created a UL Closed Loop Standard for Electronics, designed to certify in part that IT derived plastics are being reused in new IT products. Bill.hoffman@ul.com or Ex. 6 Personal Privacy (PP)

Dell is certifying that they are using ITE derived plastics in some of their new IT products via this UL standard. So Lucian Turk of Dell may have some info to share: lucian.turk@dell.com. Tell him I suggested you reach out. Ex. 6 Personal Privacy (PP)

Hope this is helpful!

Holly Elwood

Senior Advisor

EPA's Environmentally Preferable Purchasing Program

elwood.holly@epa.gov

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www.epa.gov/greenerproducts

From: Kinn, Alison
Sent: Monday, December 17, 2018 12:01 PM
To: James Ewell <james.ewell@greenblue.org>; Elwood, Holly <Elwood.Holly@epa.gov>; Pollard, Karen <Pollard.Karen@epa.gov>
Subject: RE: E-waste recyclers

Hi James! This sounds exciting. I'm looping in the Agency experts on this topic, Holly and Karen. I'll let you 3 take it from here.

Best wishes!

Alison

Alison Kinn Bennett - Senior Advisor

Sustainable Products & Purchasing

EPP Program - Office of Pollution Prevention and Toxics

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office: Ex. 6 Personal Privacy (PP) email: kinn.alison@epa.gov

www.epa.gov/greenerproducts

From: James Ewell <james.ewell@greenblue.org>
Sent: Monday, December 17, 2018 11:55 AM
To: Kinn, Alison <Kinn.Alison@epa.gov>
Subject: E-waste recyclers

Hi Alison,

I am participating in a research project that is being led by Closed Loop Partners and being sponsored by Google and the American Chemistry Council. We are examining the landscape of technologies for chemically recycling plastics. Given that it is Google's hardware division that is sponsoring the research, we are trying to characterize the opportunities for recycling plastics from end of life electronics. I was wondering if you could help me to identify the following sources of information?

1. List of e-waste reclaimers and recyclers in N. America?

2. Latest information about the mix of plastics commonly found in today's e-waste fraction? All of the reports I can find are pretty dated.

We are mapping all data to visualize the flows of relevant materials in N. America. Phase 1 deliverables are due this Wed and Google just asked us to include e-waste reclaimers/recyclers on the map. So yikes!

Any chance you can point me in the right direction to find information about companies involved in e-waste as sources of plastics for recycling by today or tomorrow?

Apologies for such short notice but just got request today.

Hope all is well with you and happy holidays to you and yours!

Cheers,

James

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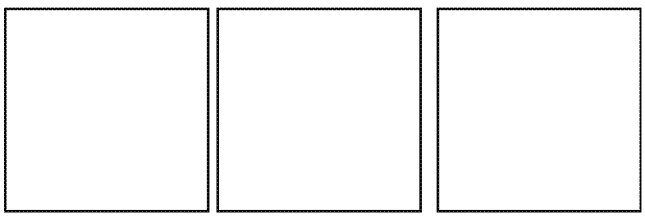

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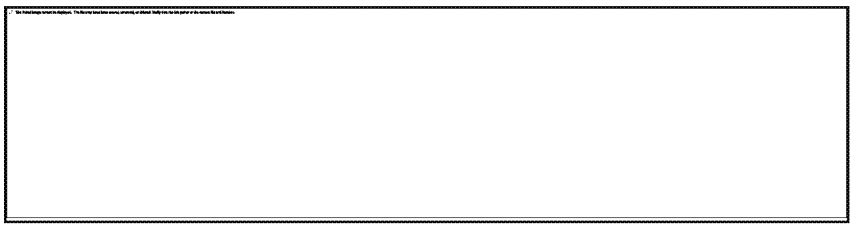

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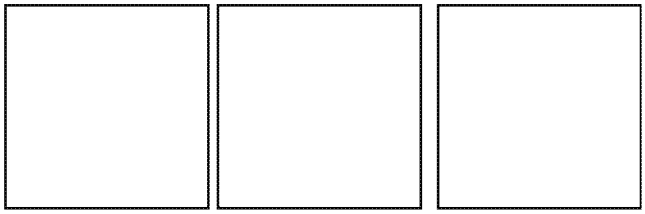

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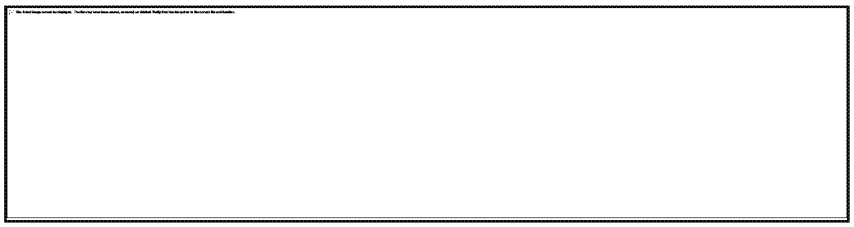

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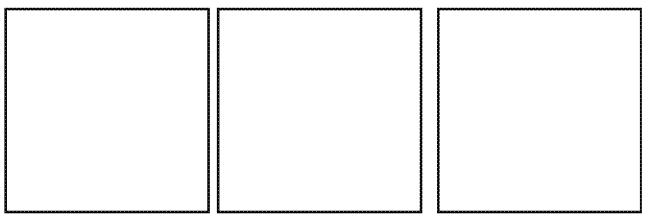

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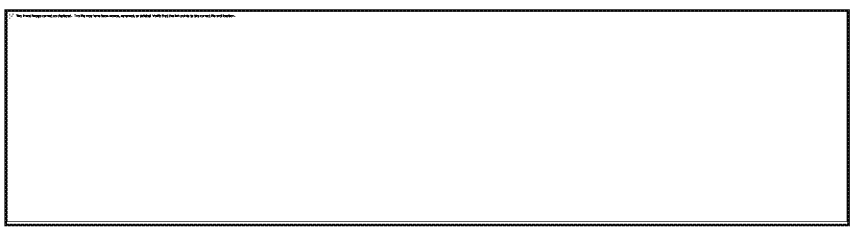

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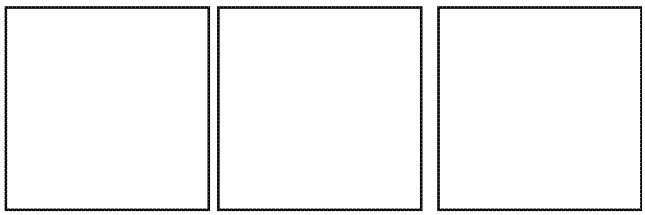

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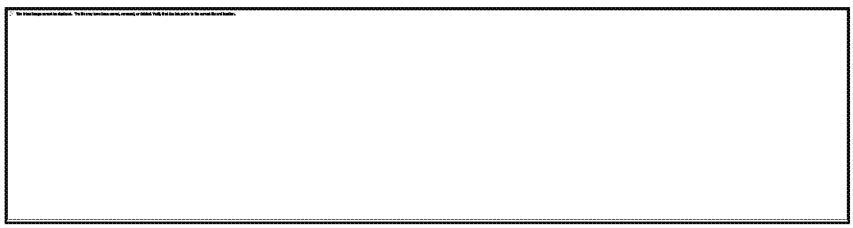

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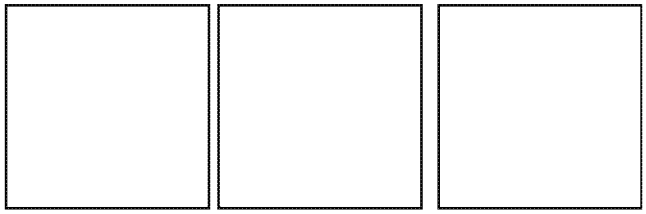

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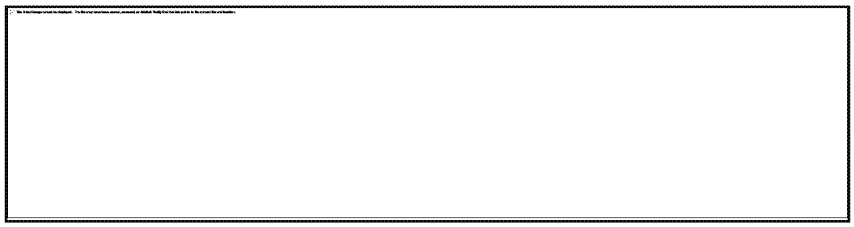

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